

REMARKSAllowed and Allowable Claims

It is noted with appreciation that the Examiner has allowed Claims 68-71, 79 and 83 and indicated that Claims 51-52, 61-62, 66-67 and 72-74 are allowable.

Rejection of Claims 38-50, 53-60, 63-65, 75-78, 80-82 and 84-85 under 35 U.S.C. § 103(a):

The Examiner has rejected Claims 38-50, 53-60, 63-65, 75-78, 80-82 and 84-85 under 35 U.S.C. § 103(a) as obvious over Cassidy et al., in view of newly cited Somerville et al. The Examiner's rejection is respectfully traversed.

The Examiner is correct in stating that the claims are drawn to a method of reducing corrosion of a fermentor during growth of microorganisms wherein the method requires obtaining microorganisms from a saline environment. The Examiner properly admits that the claimed subject matter differs from Cassidy et al. in that microorganisms of Cassidy et al. are not disclosed as being obtained from a saline environment. To account for the deficiencies of Cassidy et al., the Examiner has relied on newly cited Somerville et al.

The combination of Cassidy et al. and Somerville et al. does not render the claimed invention obvious for at least three reasons, as explained in greater detail below. First, Somerville et al. is nonanalogous art. Second, there is no suggestion or motivation to combine Cassidy et al. and Somerville et al. Third, even if one were to combine Cassidy et al. and Somerville et al., it would not render the claimed invention obvious.

To rely on a reference under 35 U.S.C. § 103, it must be analogous prior art. (See MPEP 2141.01(a)) Specifically, the reference must either be in the field of the invention or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. The field of the present invention is the fermentation of microorganisms from a saline environment, and in particular, a method for reducing corrosion of the fermentor during such fermentation. Corrosion is reduced by maintaining a low chloride level throughout the fermentation process. On the other hand, Somerville et al. is directed to recovering various products from brine solutions. The brine is added to the reactor with all the chloride present. Therefore, corrosion is not reduced by using a low chloride solution. Instead, chloride is recovered from the full-strength brine solution, and the

reactor is exposed to the corrosive full-strength brine solution. The particular passage referred to by the Examiner (column 5, lines 30-35) deals with the use of sodium hydroxide to adjust the pH, and not to replace chloride salts in the fermentation of microorganisms from a saline environment in order to reduce corrosion. A skilled artisan, looking for a solution to corrosion problems in the fermentation of microorganisms from saline environments would clearly not refer to Somerville et al. as part of a solution to the problem. Therefore, it is respectfully submitted that Somerville et al. is nonanalogous art.

There is no motivation or suggestion to combine Cassidy et al. and Somerville et al. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art" (see MPEP 2143.01). Cassidy et al. is directed to the production of antibiotics by growing species of *Streptomyces* on suitable fermentation media. There is no teaching or suggestion to reduce fermentor corrosion in Cassidy et al. Somerville et al. is directed to the recovery of products from a brine solution. There is no motivation or suggestion to combine the two references. The Examiner states in paragraph 7 of the Office Action that "it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to combine the teachings of the cited references, Cassidy and Somerville, to obtain a method for reducing corrosion of the fermentor during growth of microorganisms in a saline fermentation medium." In MPEP 2143.01 it is expressly pointed out that: "the level of skill in the art cannot be relied upon to provide the suggestion to combine references," instead, there must be an "objective reason to combine the teachings of the references."

Even if one were to combine the references, which would clearly be improper, the present claimed invention would not be rendered obvious. Cassidy et al. does not render the claims obvious for the reasons set forth in the prior Response filed on August 8, 2001. The single most critical deficiency of the references, even if combined, is that they do not disclose or suggest that microorganisms from a saline environment can be successfully fermented in a low chloride medium containing a nonchloride sodium salt. Surprisingly, the present inventor has not only discovered that such fermentation is possible, but that lipid production may even be increased! Neither of the

references disclose or suggest the fermentation of microorganisms from a saline environment. Neither of the references disclose nor suggest the fermentation of microorganisms for the purpose of producing lipids as claimed in Claims 76-79. Indeed, Somerville et al. do not disclose or suggest the fermentation of microorganisms at all. Even if microorganisms were present in the brine solutions of Somerville et al. (clearly such microorganisms are not disclosed or suggested by the reference), there is no disclosure or suggestion that the conditions set forth in Somerville et al. would be suitable for fermentation of such microorganisms. And it is important to remember that the sodium hydroxide is added late in the process in order to adjust pH prior to evaporation, but not during the earlier reactions. The brine itself is passed on to the evaporation equipment. In other words, Somerville et al. do not replace chloride with non-chloride sodium salt, but rather add the base (sodium hydroxide) to adjust the pH of the brine, which is principally sodium chloride (column 5, lines 30-50). This is a direct teaching away from the present invention. One skilled in the fermentation arts could not possibly deduce from the cited references that microorganisms from a saline environment could be successfully fermented in a low-chloride medium containing non-chloride sodium salts.

Additionally, it is respectfully submitted that Somerville et al. do not teach "using saline water environment for treating a tank or container (i.e. fermentor) and further disclose adding a non-chloride sodium salt to reduce corrosion" as suggested by the Examiner. Instead, the brine solution (which the Examiner refers to as saline water environment) is not employed for treating a tank or container, but rather is the starting material for recovering products. Additionally, the non-chloride sodium salt is the well-known base, sodium hydroxide, which is added to increase pH, and not to substitute for chloride salts.

In the latest Office Action, the Examiner failed to address the additional patentable limitations found in the dependent claims. For example, as discussed in the prior Response, the cited art also does not teach or suggest: (1) the use of microorganisms from a marine or inland saline environment as claimed in Claims 47 and 58; (2) the use of euryhaline microorganisms as claimed in Claims 75, 84 and 85; (3) the use of microorganisms that are capable of growth at a salinity level which results in a conductivity of from about 5 mmho/cm to about 40 mmho/cm as claimed in Claims 49 and 59; (4) the use of microorganisms that are capable of growth in 60% seawater or 60%

artificial seawater as claimed in Claims 50 and 60; (5) the production of lipids as claimed in Claims 76-79; or (6) the use of microorganisms that grow in an environment where sodium chloride is the primary source of sodium as claimed in Claims 80-83.

The Examiner has requested that Claims 63-67 be canceled. It is respectfully submitted that these claims do not need to be canceled. The Examiner has indicated that Claims 66-67 are allowable.

The additional newly cited reference, Dobson, Jr. et al., does not overcome the deficiencies of the cited references discussed above.

In view of the foregoing remarks, the Examiner is respectfully requested to withdraw the rejection of Claims 38-50, 53-60, 63-65, 75-78, 80-82, 84 and 85 under 35 U.S.C. § 103(a).

It is respectfully submitted that all claims are in condition for allowance, and it is respectfully requested that the Examiner pass this application to issue. In the event the Examiner does not allow all claims or has any questions regarding the claims, please consider this a contingent request for an interview with the Examiner, to take place at the Examiner's office, on February 5, 2002. In that event, please call the undersigned agent at (303) 863-9700.

It is not believed that any further amounts are due, however if any amount is due, please debit any underpayment to Deposit Account No. 19-1970.

Respectfully submitted,

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